

# PATENT ABSTRACTS OF JAPAN

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(71)Applicant : ANRITSU CORP

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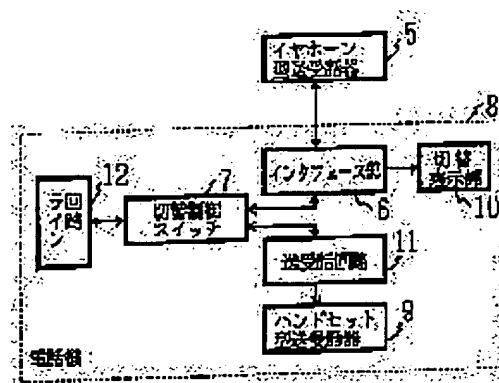
(72)Inventor : MORISADA AKIRA

## (54) TELEPHONE SET

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To cut off noise at a noisy location and to attain efficient hand-free speech with excellent speech quality by using a bone conduction microphone for a transmitter of an earphone type handset.

**SOLUTION:** An earphone type handset 5 includes a bone conduction microphone detecting a bone conduction voice signal and transducing the sign into an electric signal and a speaker to sound the reception voice signal. A changeover control switch 7 is used to select the earphone type handset 5 or a handset 9 of a telephone set 8. The selection to the earphone type handset 5 is displayed on a changeover display section 10. An interface section 6 acts as an interface for the earphone type handset 5.



## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or

application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's  
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decision of rejection]

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**CLAIMS**

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[Claim(s)]

[Claim 1] The bone conduction microphone which detects a bone conduction sound signal and is changed into an electrical signal (1), The earphone mold headset which has the loudspeaker (2) which changes an electrical signal into a sound signal (5), The interface section for communicating with this earphone mold headset (6), The change control switch which changes a hand-set mold headset (9), and this hand-set mold headset and said earphone mold headset (7), Telephone equipment which consists of telephones (8) which have the change display (10) which displays the condition of this change control switch, and is characterized by the handsfree message which can change mutual [ between the hand-set mold headsets of an earphone mold headset and telephone ].

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention is telephone equipment which has an earphone mold headset with a bone conduction microphone, and relates to the telephone equipment in which the message of handsfree [ a noise environment and the condition of having used both hands for other purposes ] is possible.

[0002]

[Description of the Prior Art] There were a means talk over the telephone while an adhesion pad is stuck on the means and the headset which bend a neck to the headset which hung the headset on the shoulder and was fixed to the shoulder in order are handsfree and to talk over the telephone with conventional telephone equipment, force a lug, and opening is made to approach, and talks over the telephone, the part is suppressed on the cheek and a headset fixes to the face according to the adhesion of an adhesion pad, and a means a microphone receives a transmission sound and talk a receiver sound over the telephone with a sink to a loudspeaker.

[0003] However, in order to use a hand freely while the 1st means raises a shoulder at the time of a message, bends a neck and must be tired of suppressing a headset to a lug and opening, there was a remarkable limit. While adhesion became uncertainty depending on the conditions (for example, are irregular) of a user's cheek, the adhesion pad stopped committing the 2nd means effectively by repeating use. Therefore, in order to maintain adhesion, there was a fault, like there is the need of sometimes exchanging an adhesion pad. While the receiving sound according [ the 3rd means ] to a loudspeaker turned into noise to the nearby man and did active jamming, in order that a microphone might gather the surrounding noise, the speech quality deteriorated. Therefore, in the environment of the office where it being handsfree and talking over the telephone has various constraint, and many people are working to coincidence around, the effective message of neither of the means was completed.

[0004]

[Problem(s) to be Solved by the Invention] it be make in order that this invention may solve such a technical problem , and the noise be omit in the location in which it be make to constitute as an earphone mold headset which insert a headset in a lug by use a bone conduction microphone for the part of the telephone transmitter of an earphone mold headset , and many people exist in office etc. , and a location with much noise , and it aim at offer the telephone equipment which can perform the efficient handsfree message with a sufficient speech quality .

[0005]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, in the telephone equipment of this invention, an earphone mold headset consists of a connecting cord for connecting with the loudspeaker for transmitting the bone conduction microphone for taking up transmission voice, and a receiver voice, and telephone, and a jack. Moreover, it consists of the interface sections for connecting to telephone the change display which indicates that it changed to the change control switch for using it, changing mutual [ between an earphone mold headset and the hand-set mold

headset of telephone ], and the earphone mold headset, and an earphone mold headset.

[0006] Thus, according to the constituted telephone equipment, it can talk over the telephone, looking for data with both hands as compared with the message by the headset of the hand-set mold which cannot use old both hands, and intention Bahnung improves far. Moreover, it is unified as an earphone mold and a headset is firmly fixed to an ear hole. Therefore, a receiving sound does not leak outside from the loudspeaker which the acoustical effect on the exterior can be shut out from the outside, it is not necessary to utter a big voice and it does not need to transmit since the bone conduction microphone which is a telephone transmitter is covered from the external noise while it selects only a sender's voice, and serves as an earphone. Moreover, it can return to the message by the headset of the original hand-set mold with a circuit changing switch as occasion demands.

[0007]

[Embodiment of the Invention]

[1st operation gestalt] Drawing 1 is the block diagram showing 1 operation gestalt of this invention. The hand-set mold headset 9 is a headset of the usual telephone, and the line circuit 12 and the transmission-and-reception talk circuit 11 of telephone are also used for the usual telephone, and it has an ordinary function. The change control switch 7 is constituted so that it may have the function which changes the line circuit 12 of telephone 8 from the hand-set mold headset 9 to the hand-set mold headset 9 from the earphone mold headset 5 by the earphone mold headset 5 or actuation for the second time whenever an operator does push-button actuation. Moreover, the change display 10 has a lighting display function, and when a line circuit 12 is changed to the earphone mold headset 5, it indicates by lighting. Therefore, a message person can telephone to a partner in the condition that both hands can be used freely.

[0008] Drawing 2 is the perspective view showing 1 operation gestalt in the telephone of a table top type. The earphone mold headset 5 is connected to the line circuit 12 of telephone 8 through a connecting cord 3, the connection 4 to telephone, and the interface section 6 to the earphone mold headset 5. When an operator pushes the change control switch 7, the line circuit 12 connected to the hand-set mold headset 9 of telephone 8 is changed to connection with the earphone mold headset 5, and is connected to the earphone mold headset 5 via the jack 4 to telephone 8, and a connecting cord 3. In order to show that the change control switch 7 changed to coincidence to the earphone mold headset 5 side, a lighting indication of the change display 10 is given.

[0009] Conversely, in order to change a line circuit 12 from the earphone mold headset 5 to the hand-set mold headset 9 of telephone 8, it is carried out by pushing again the change control switch 7 by which it is indicated by lighting. While a line circuit 12 is changed to the transmission-and-reception talk circuit 11 of telephone 8 by this actuation, in order to show having changed, a lighting display disappears. The connecting cord 3 linked to the earphone mold headset 5 gives loose curl to a code while setting it as the die length in consideration of a motion of a message person's upper half of the body, and it absorbs a motion of a message person, and the bone conduction microphone 1 maintains always required contact to a wearing person's concha. Thus, by constituting, while being able to carry out the transmission-and-reception talk of the good voice, omission of earphone mold headset 5 body are prevented.

[0010] Drawing 3 is the block diagram of telephone equipment. A line circuit 12 consists of a tone ringer circuit, a dial dispatch circuit, etc. The interface section 6 consists of transmission and a receiver circuit. In the transmission circuit, it has the compensation function of the signal of the bone conduction microphone 1, and the magnification function to adjust track outgoing level. In the receiver circuit, it has the automatic-volume-control function to a loudspeaker 2. Furthermore, the interface section 6 outputs a lighting control signal to the change display 10 in order to show that the change control switch 7 changed to the earphone mold headset 5 side.

[0011] [2nd operation gestalt] Drawing 4 is the block diagram showing the 2nd operation gestalt of this invention. It is the operation gestalt which made the interface section 6 of drawing 1 the wireless circuit 6 with a wireless function. In connection with this, the earphone mold headset 5 should also have the wireless function.

[0012] [3rd operation gestalt] Drawing 5 is the block diagram showing the 3rd operation gestalt of this invention. It is the example which connects to the connection terminal to the hand-set mold headset 9 of

the transmission-and-reception talk circuit 11 of the usual telephone the adjunct which has this invention function. It connects with the earphone mold headset 5 through the change control switch 7 and the interface conversion circuit 13 from a connection terminal. On the other hand, it connects with the hand-set mold headset 11 through the change control switch 7 from a connection terminal.

[0013]

[Effect of the Invention] Since it is telephone equipment constituted as mentioned above, while the old message using a hand-set mold headset is also possible, it becomes possible by using it doing a usage activity freely, changing both hands to an earphone mold headset to talk over the telephone in the condition that both hands can be moved freely. Moreover, since a microphone etc. is not located in the front face of a face, there is nothing that blocks a field of view. Therefore, it can talk [ while rolling up data, or ] over the telephone, operating a computer etc., and efficient information interchange can be carried out.

[0014] Moreover, since a headset serves as an earphone mold, it is firmly stuck to an ear hole and it is equipped with it, while it can perform a good message also under the large conditions of a noise, it is rare not to transmit in a loud voice and to make you trouble in the neighborhood. Moreover, since it is not necessary to have a headset in a hand and to talk over the telephone, a prolonged message is possible and fatigue by message like the former can be mitigated.

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**TECHNICAL FIELD**

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**PRIOR ART**

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**EFFECT OF THE INVENTION**

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**TECHNICAL PROBLEM**

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing 1 operation gestalt of telephone equipment.

[Drawing 2] It is the perspective view showing telephone equipment.

[Drawing 3] It is the circuit diagram showing telephone equipment.

[Drawing 4] It is the block diagram showing the 2nd operation gestalt of telephone equipment.

[Drawing 5] It is the block diagram showing the 3rd operation gestalt of telephone equipment.

[Description of Notations]

1 [ -- A connection, 5 / -- An earphone mold headset, 6 / -- The interface section, 7 / -- A change control switch, 8 / -- Telephone, 9 / -- A hand-set mold headset, 10 / -- Change display. ] -- A bone conduction microphone, 2 -- A loudspeaker, 3 -- A connecting cord, 4

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[Translation done.]

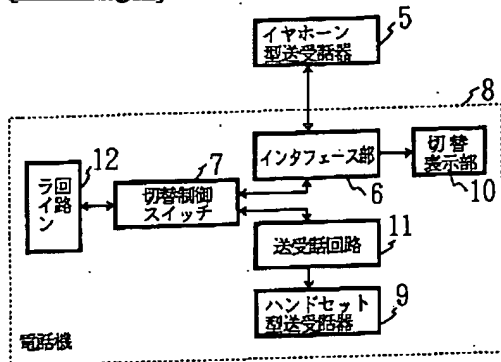
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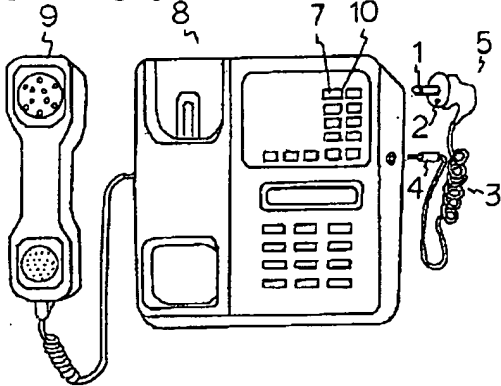
## DRAWINGS

[Drawing 1]



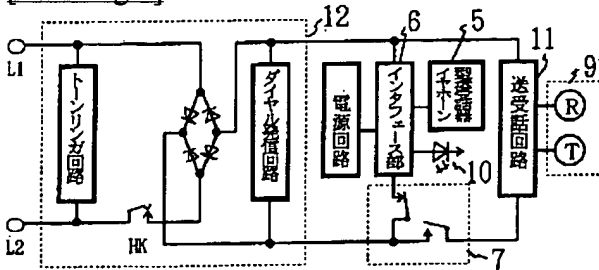
9: Handset model headset  
 12: line circ  
 11: T/R talk circ  
 7: Change control sw. 2P

[Drawing 2]

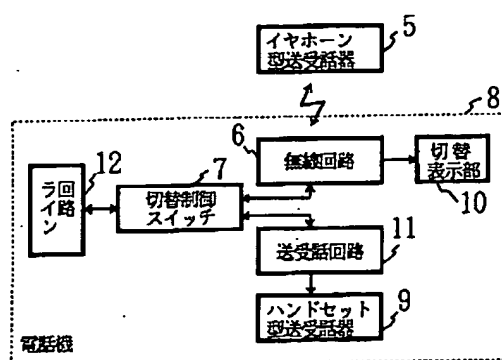


2: loudspeaker

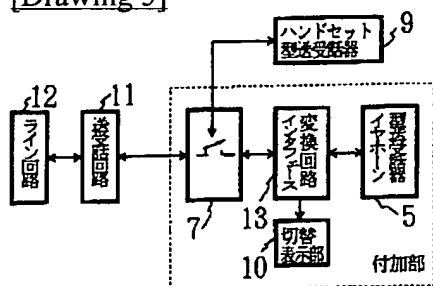
[Drawing 3]



[Drawing 4]



[Drawing 5]



[Translation done.]